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Attorney Docket No.: 18921-001 NATL

EPW  
1637/18

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Stemple and Armes  
SERIAL NUMBER: 09/936,095 EXAMINER: Teresa E. Strzelecka  
FILING DATE: June 6, 2002 ART UNIT: 1637  
FOR: METHOD FOR DIRECT NUCLEIC ACID SEQUENCING

**MAIL STOP AMENDMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**TRANSMITTAL LETTER**

Transmitted herewith for filing in the present application are the following documents:

1. Information Disclosure Statement (2 pages), in duplicate;
2. Modified Form 1449/PTO (3 pages), in duplicate;
3. Cited References A1-A17, B1-B9, and C1-C35;
4. Check #2560 for the amount of \$180.00; and
5. Return Postcard.

If the enclosed papers are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned at (212) 935-3000.

The Commissioner is authorized to charge any fees that may be due to the undersigned's account, Deposit Account No. 50-0311 Ref. No. 18921-001 NATL. Please address all correspondence to customer number **35437**. A duplicate copy of this transmittal letter is enclosed herewith.

Respectfully submitted,

Ivor Elrifi, Reg. No. 39,529  
Eric Sinn, Reg. No. 40,177  
Attorneys for Applicants  
c/o MINTZ, LEVIN, COHN, FERRIS  
GLOVSKY & POPEO P.C.  
Chrysler Center  
666 Third Avenue, 24<sup>th</sup> Floor  
New York, New York 10017  
Phone: (212) 935-3000  
Fax: (212) 983-3115

Dated: April 8, 2005

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANTS: Stemple and Armes

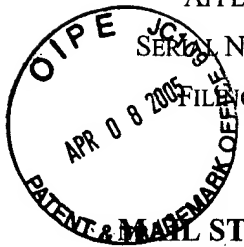
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**INFORMATION DISCLOSURE STATEMENT**

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, Applicant hereby makes of record the documents listed on the attached modified Form PTO-1449 (submitted in duplicate) in the above-identified application, copies of which are submitted herewith.

This Information Disclosure Statement is being filed more than three months after the filing date of this application but before the mailing date of a Notice of Allowance under 37 C.F.R. §1.311. Accordingly, the fee of \$180 as set forth in 37 C.F.R. §1.17(p) is enclosed.

It is respectfully requested that the Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims. It is also respectfully requested that the Examiner initial, sign and date, and return a copy of the signed modified Form PTO-1449 with the next U.S. PTO communication, to evidence that the cited information has been fully considered by the U.S. Patent and Trademark Office during the examination of this application.

By submitting this Information Disclosure Statement, the Applicants make no representation that: (1) a search has been performed, the extent of any search performed, or that more relevant information does not exist; (2) the information cited in the Statement is, or is considered to be, material to patentability as defined in 37 C.F.R. §1.56(b); and (3) the information cited in the Statement is, or is considered to be, in fact, prior art as defined by

35 U.S.C. §102.

The order of presentation of the references should not be construed as an indication of the importance of the references. The Examiner is urged to form his/her own conclusion regarding the relevance of the cited information.

Please charge any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. 50-0311, Reference No. 18921-001 NATL.

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Eric Sinn, Reg. No. 40,177  
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Chrysler Center  
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New York, New York 10017  
Phone: (212) 935-3000  
Fax: (212) 983-3115

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NYC 319437v1



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35 U.S.C. §102.

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Respectfully submitted,



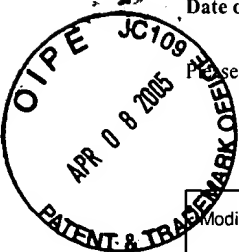
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Attorneys for Applicants  
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PTO/SB (12-97)  
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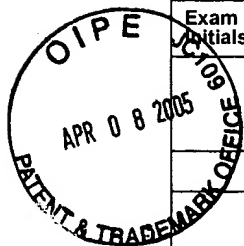
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Modified Form 1449/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (use as many sheets as necessary)	Application Number	09/936,095
	Filing Date	06/06/02
	First Named Inventor	Stemple
	Group Art Unit	1637
	Examiner Name	Strzelecka
	Attorney Docket Number	18921-001 NATL

U.S. PATENT DOCUMENTS							
Exam Initials	Cite No.	U.S. Patent Document No.	Issue Date	Name of Patentee(s) or Applicant(s)	Class	Sub Class	Filing Date If Appropriate
	A1	4,811,218	03/07/89	Hunkapiller et al			06/02/86
	A2	5,171,534	12/15/92	Smith et al			12/15/92
	A3	5,302,509	04/12/94	Cheeseman			02/27/91
	A4	5,405,747	04/11/95	Jett et al			03/07/94
	A5	5,547,839	08/20/96	Dower and Fodor			12/06/90
	A6	5,728,529	03/17/98	Metzker and Gibbs			11/06/95
	A7	5,798,210	08/25/98	Canard and Sarfati			03/28/94
	A8	5,821,058	10/13/98	Smith et al			12/21/94
	A9	5,846,727	12/08/98	Soper et al			05/29/97
	A10	5,853,668	12/29/98	Begg et al			05/25/95
	A11	5,858,671	01/12/99	Jones			11/01/96
	A12	5,716,825	02/10/98	Hancock et al.			11/01/95
	A13	5,919,626	07/06/99	Shi et al.			06/06/97
	A14	6,136,543	10/24/00	Anazawa et al.			01/31/97
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	A16	6,255,083	07/03/01	Williams			12/13/99
	A17	5,856,174	01/05/99	Lipshutz et al.			01/19/96

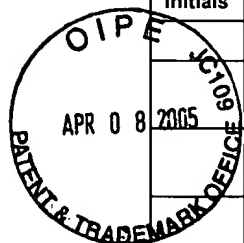
FOREIGN PATENT DOCUMENTS							
Exam Initials	Cite No.	Foreign Patent Document Office Number		Name of Patentee(s) or Applicant(s)	Date of Publication	Translation Yes No	
	B1	WO	98/33939	Hitachi, LTD	6 August 1998		X
	B2	GB	2 102 005 A	MTA Kozponti Kemiai	26 January 1983		
	B3	WO	90/13666	Amer-Sham International PLC	15 November 1990		
	B4	WO	91/06678	SRI International	16 May 1991		
	B5	WO	93/21340	Medical Research Council	28 October 1993		
	B6	WO	94/21822	Koster, Hubert	29 September 1994		
	B7	WO	96/31622	Isis Innovation LTD	10 October 1996		
	B8	WO	00/36152	Li-Cor, Inc.	22 June 2000		
	B9	WO	99/05315	Medical Biosystems LTD	4 February 1999		

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
Exam Initials	Cite No.	Name of Author, Title (when appropriate), Publication, Volume, Page(s), Date, Etc.
	C1	Brandis <i>et al.</i> "Slow Rate of Phosphodiester Bond Formation Accounts for the Strong Bias that Taq DNA Polymerase Shows against 2',3'-Dideoxynucleotide Terminators." Biochemistry 35: 2189-2200 (1996).
	C2	Burns <i>et al.</i> "An Integrated Nanoliter DNA Analysis Device." Science 282: 484-487 (1998).
	C3	Chan and Nie "Quantum Dot Bioconjugates for Ultrasensitive Nonisotopic Detection." Science 281: 2016-2018 (1998).
	C4	Dickson <i>et al.</i> "On/off blinking and Switching Behaviour Of Single Molecules of Green Fluorescent Protein." Nature 388: 355-358 (1997).
	C5	Dickson <i>et al.</i> "Three-Dimensional Imaging of Single Molecules Solvated in Pores of Poly(acrylamide) Gels." Science 274: 966-971 (1996).
	C6	Dovichi <i>et al.</i> "DNA Sequencing By Capillary Electrophoresis." Electrophoresis 18: 2393-2399 (1997).
	C7	Gordon <i>et al.</i> "Quantitative Fluorescence Resonance Energy Transfer Measurements Using Fluorescence Microscopy." Biophys. J. 74: 2702-2713 (1998).
	C8	Ha <i>et al.</i> "Probing The Interaction Between Two Single Molecules: Fluorescence Resonance Energy Transfer Between A Single Donor And A Single Acceptor." Proc. Natl. Sci. USA 93: 6264-6268 (1996).
	C9	Hacia, "Resequencing and Mutational Analysis Using Oligonucleotide Microarrays." Nature Genetics Supp. 21: 42-47 (1999).
	C10	Harada, <i>et al.</i> "Single-Molecule Imaging of RNA Polymerase-DNA Interactions in Real Time." Biophys. J. 76: 709-715 (1999).
	C11	Hiratsuka <i>et al.</i> "New Ribose-Modified Fluorescent Analogs of Adenine and Guanine Nucleotides Available as Substrates for Various Enzymes." Biochim Biophys Acta 742: 496-508 (1983).
	C12	Idury and Waterman, "A New Algorithm for DNA Sequence Assembly." J. Comput. Biol. 2: 291-306 (1995).
	C13	Ishijima <i>et al.</i> "Simultaneous Observation of Individual ATPase and Mechanical Events by a Single Myosin Molecule During Interaction with Actin." Cell 92: 161-171 (1998).
	C14	Iwane <i>et al.</i> "Single Molecular Assay of Individual ATP Turnover by a Myosin-GFP Fusion Protein Expressed In Vitro." FEBS Lett. 407: 235-238 (1998).
	C15	Izawa <i>et al.</i> "Recognition Sites of 3'-OH Group by T7 RNA Polymerase and Its Application to Transcriptional Sequencing." J. Biol. Chem. 273: 14242-14246 (1998).
	C16	Keller <i>et al.</i> "Single-Molecule Fluorescence Analysis in Solution." Applied Spectroscopy 50: 12A-32A 1996.
	C17	Kricka, "Miniaturization of Analytical Systems." Clinical Chemistry 44:9: 2008-2014 (1998).
	C18	Luckey <i>et al.</i> "High Speed DNA Sequencing By Capillary Electrophoresis." Nucleic Acids Res 18: 4417-4421 (1990).
	C19	Mertz <i>et al.</i> "Single-Molecule Detection By Two-Photon-Excited Fluorescence." Opt. Lett. 20: 2532-2534 (1995).
	C20	Metzker <i>et al.</i> "Termination Of DNA Synthesis by Novel 3'-Modified-Deoxyribonucleoside 5'-Triphosphates." Nucleic Acids Res. 22: 4259-4267 (1994).
	C21	Metzker <i>et al.</i> "Elimination of Residual Natural Nucleotides from 3'-O-Modified-dNTP Syntheses by Enzymatic Mop-Up." BioTechniques 25.5: 814-817 (1998).
	C22	Metzker <i>et al.</i> "Quantitation of Mixed-Base Populations of HIV-1 Variants by Automated DNA Sequencing with BODIPY <sup>®</sup> Dye-Labeled Primers." BioTechniques 25.3: 446-462 (1998).
	C23	Nie <i>et al.</i> "Probing Individual Molecules with Confocal Fluorescence Microscopy." Science 266: 1018-1021 (1994).
	C24	Nie and Zare, "Optical Detection of Single Molecules." Annu. Rev. Biophys. Biomol. Struct. 26: 567-596 (1997).
	C25	Orita <i>et al.</i> "Rapid and Sensitive Detection of Point Mutations and DNA Polymorphisms Using the Polymerase Chain Reaction." Genomics 5: 874-879 (1989).

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OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS		
Exam Initials	Cite No.	Name of Author, Title (when appropriate), Publication, Volume, Page(s), Date, Etc.
	C26	Pierce <i>et al.</i> "Imaging Individual Green Fluorescent Proteins." Nature 388: 338 (1997).
	C27	Prober <i>et al.</i> "A System for Rapid DNA Sequencing With Fluorescent Chain-Terminating Dideoxynucleotides." Science 238: 336-341 (1987).
	C28	Rawlinson <i>et al.</i> "Analysis of the Complete DNA Sequence of Murine Cytomegalovirus." J. Virol 70: 8833-8849 (1996).
	C29	Smith <i>et al.</i> "Fluorescence Detection in Automated DNA Sequence Analysis." Nature 321: 674-679 (1986).
	C30	Sutton <i>et al.</i> "TIGR Assembler: A New Tool for Assembling Large Shotgun Sequencing Projects." Genome Sci. Technol. 1: 9-19 (1995).
	C31	Tokunaga <i>et al.</i> "Single Molecule Imaging of Fluorophores and Enzymatic Reactions Achieved by Objective-Type Total Internal Reflection Fluorescence Microscopy." Biochem. Biophys. Res. Comm. 235: 47-53 (1997).
	C32	Venter <i>et al.</i> "Shotgun Sequencing of the Human Genome." Science 280: 1540-1545 (1998).
	C33	Wang <i>et al.</i> "Force and Velocity Measured for Single Molecules of RNA Polymerase." Science 282: 902-907 (1998).
	C34	Yin <i>et al.</i> "Transcription Against an Applied Force." Science 270: 1653-1657 (1995).
	C35	International Search Report for PCT/GB00/00873 dated August 18, 2000.

\* a copy of this reference is not provided as it was previously cited by or submitted to the office in a prior application, Serial No. \_\_\_\_\_, filed \_\_\_\_\_, and relied upon for an earlier filing date under 35 U.S.C. §120 (continuation, continuation-in-part, and divisional applications).

Examiner Signature		Date Considered	
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered.

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